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TITLE: Incinerator for organic refuse, industrial  
waste - includes power supply circuits that supply  
voltage to electrodes, between which heat emitting bodies  
made of carbon particle is filled up

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ABSTRACTED-PUB-NO: JP 11148779A

BASIC-ABSTRACT:

NOVELTY - A lower heating unit (10) and an upper heating unit (20), include a pair of electrodes (12,22) arranged opposite to each other. Heat emitting bodies (13,23) made of carbon particles is filled between the electrodes. The heat emitting bodies include heat release tubes (14,24) respectively. Power supply circuit (15,25) supply voltage to the electrodes.

USE - For organic refuse, industrial waste.

ADVANTAGE - Enables incineration of various wastes and products destroyed by fire at high temperature. Toxic substance such as dioxins is not generated during incineration. DESCRIPTION OF DRAWING(S) - The figure shows the cross sectional drawing of the incinerator. (10) Lower heating unit; (20) Upper heating unit; (12,22) Electrodes; (13,23) Heat emitting bodies; (14,24) Heat release tubes; (15,25) Power supply circuits.

CHOSEN-DRAWING: Dwg.1/3

TITLE-TERMS: INCINERATION ORGANIC REFUSE INDUSTRIAL WASTE POWER SUPPLY CIRCUIT

SUPPLY VOLTAGE ELECTRODE HEAT EMIT BODY MADE CARBON PARTICLE FILLED UP

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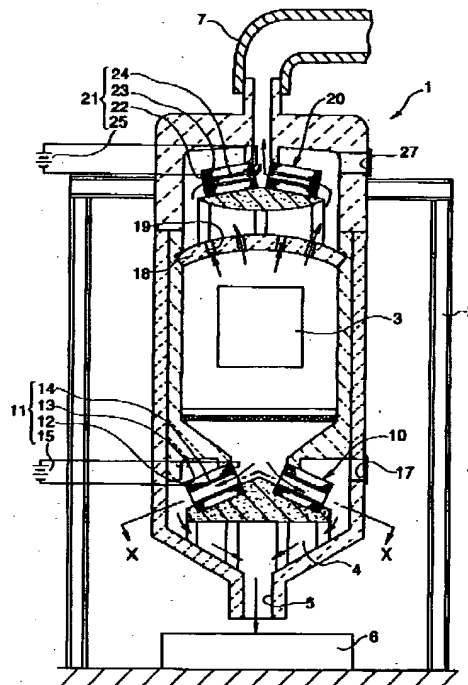
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(54) 【発明の名称】 電気抵抗熱による焼却灰等の高機能溶融炉

(57) 【要約】

【課題】 電気抵抗熱を被焼却物等に効率的に照射して加熱燃焼でき、焼却炉、溶融炉としての高機能を発揮し、各種の廃棄物であっても有害な排気ガスその他の有害物質を生じさせず、しかも減容化して処理の容易性をも図る。

【解決手段】 一般廃棄物、産業廃棄物等の被焼却物を焼却処理する焼却炉本体1の上下部に平面でほぼドーナツ状の加熱部10、20夫々を設ける。この加熱部10、20は、相互に対向配置した一対の電極12、22と、この電極12、22相互間に充填した炭素粒子を有して成る発熱体13、23と、内外に連通させて発熱体13、23内に配置した耐熱性の放熱筒14、24と、電極12、22間に電流を供給する電源回路15、25とを備えた多数の電気抵抗発熱体11、21を相互に隣接配置して全体としてドーナツ状に配列して成るものとする。放熱筒14、24は、加熱部10、20の内外周面に開口端を配置し、内周面側の開口端は外周面側の開口端に比し高位置に設定してある。



## 【特許請求の範囲】

【請求項1】 各種の被焼却物を加熱燃焼し、焼却処理する焼却炉本体に平面でほぼドーナツ状を呈する加熱部を設けて成り、この加熱部は、相互に対向配置された一対の電極と、この電極相互間に充填された炭素粒子を有して成る発熱体と、内外に連通させて発熱体内に配置された耐熱性の放熱筒と、電極間に電流を供給する電源回路とを備えた多数の電気抵抗発熱体を相互に隣接配置して全体としてドーナツ状に配列して成ることを特徴とする電気抵抗熱による焼却灰等の高機能溶融炉。

【請求項2】 放熱筒は、加熱部の内外周面に開口端を配置し、内外周面の開口端のいずれか一方は他方に比し高位置に設定してある請求項1記載の電気抵抗熱による焼却灰等の高機能溶融炉。

【請求項3】 加熱部は焼却炉本体の上下部に配装し、下部の加熱部は炉内中心部側の内周面側が高位置に設定されていて、被焼却物が放熱筒の内周面側の開口端から外周面側の開口端に溶融流出されるようにし、また上部の加熱部は炉内外周縁部側の外周面側が低位置に設定されていて、排気ガス等が放熱筒の外周面側の開口端から内周面側の開口端に上昇排気されるようにしてある請求項1または2記載の電気抵抗熱による焼却灰等の高機能溶融炉。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、主として生ゴミ等の一般廃棄物、産業廃棄物、更にはそれらの焼却後の焼却灰その他を焼却処分するに際し、ダイオキシン類その他の有害物質を生じさせることなく高温状態で確実に処理でき、また取扱いも容易である電気抵抗熱による焼却灰等の高機能溶融炉に関する。

## 【0002】

【従来の技術】従来のこの種の焼却炉、溶融炉となる電気抵抗熱炉の発熱源は、対向配置した一対の電極相互間に多数の炭素粒子を充填して成る発熱体を配装し、その電極相互間に電流を供給することで発熱体に生じる電気抵抗によって発熱させるものとしている。またこの発熱源は比較的に高温状態になり、しかもその発熱制御が比較的に容易であることから例えば各種の廃棄物等を焼却する際の焼却炉、溶融炉のものとして利用されている。こうした焼却炉、溶融炉等の発熱源構造としては、筒体状に構成された多数の発熱体を例えば焼却炉底部に並列配置することで設置されているのである。

## 【0003】

【発明が解決しようとする課題】ところがこうした従来の設置構造のものによると、発熱体の周囲に発生する抵抗熱によって被焼却物等を加熱燃焼させることになるから、発生した抵抗熱を被焼却物に対して十分に付与できないものとなっている。すなわち発熱体に発生する抵抗熱は発熱体の周囲に発散されるも、直接被焼却物等に

照射されないために有効利用されず、その熱効率が必然的に低下されたものとなっていたのである。そればかりでなく、発熱体における発熱に伴ない消費される炭素粒子を新しく補充しても残存の炭素粒子等との間での発熱分布が均一化されずにムラとなり、電気抵抗値が低くなって発熱量が少なくなるのであり、その結果必然的に電流量が大きくなって電気代が高くなるものであった。

【0004】そこで本発明は叙上のような従来存した諸事情に鑑み創出されたもので、電気抵抗によって発生する抵抗熱を被焼却物等に周囲に放散されることなく集中的させて極めて有効に照射できるものとし、被焼却物等を十分に高温で加熱溶融できて短時間に大量に処理可能にすると共に焼却炉、溶融炉等として高機能なものとでき、例えば各種の産業廃棄物であってもダイオキシン類等の有害な排気ガスその他の有害物質を生じさせることなく処理でき、しかも高温で加熱溶融することで被焼却物を減容化でき、その後の各種処理をも容易に行なえるようにした電気抵抗熱による焼却灰等の高機能溶融炉を提供することを目的とする。

## 【0005】

【課題を解決するための手段】上述した目的を達成するため、本発明にあっては、各種の被焼却物を加熱燃焼し、焼却処理する焼却炉本体1に平面でほぼドーナツ状を呈する加熱部10、20を設けて成り、この加熱部10、20は、相互に対向配置された一対の電極12、22と、この電極12、22相互間に充填された炭素粒子を有して成る発熱体13、23と、内外に連通させて発熱体13、23内に配置された耐熱性の放熱筒14、24と、電極12、22間に電流を供給する電源回路15、25とを備えた多数の電気抵抗発熱体11、21を相互に隣接配置して全体としてドーナツ状に配列して成るものである。放熱筒14、24は、加熱部10、20の内外周面に開口端を配置し、内外周面の開口端のいずれか一方は他方に比し高位置に設定して構成できる。加熱部10、20は焼却炉本体1の上下部に配装し、下部の加熱部10は炉内中心部側の内周面側が高位置に設定されていて、被焼却物が放熱筒14の内周面側の開口端から外周面側の開口端に溶融流出されるようにし、また上部の加熱部20は炉内外周縁部側の外周面側が低位置に設定されていて、排気ガス等が放熱筒24の外周面側の開口端から内周面側の開口端に上昇排気されるようにして構成することができる。

【0006】以上のように構成された本発明に係る電気抵抗熱による焼却灰等の高機能溶融炉にあって、廃棄物等及びこの廃棄物等の焼却後の焼却灰等を焼却炉本体1に投入して上下部の加熱部10、20における電気抵抗発熱体11、21夫々に通電すると、電極12、22相互間に充填して成る炭素粒子の発熱体13、23がそれぞれ自身が備えている電気抵抗によって発熱させられる。この電気抵抗熱は、発熱体13、23内に配置した放熱筒

14、24壁を経てこの放熱筒14、24内の被焼却物、排気ガス等をその周囲から効率的に加熱燃焼させ、また加熱部10、20夫々で傾斜状態で放射状に配列されていることで、下部の加熱部10で流出される被焼却物、上部の加熱部20で上昇排気される排気ガス等を分散させてその全てを満遍なく加熱し、燃焼、溶融させる。炉内中心部側の内周面側が高位置に設定配装されている下部の加熱部10は、炉内中心部側に投入集積される被焼却物を炉内外周縁部側に分散させて加熱燃焼させる。また炉内外周縁部側の外周面側が低位置に設定配装されている上部の加熱部20は、炉内に発生する有害ガス等を炉内中心部側に収束収斂させて加熱燃焼させる。

【0007】

【発明の実施の形態】以下、図面を参照して本発明の実施の形態を説明するに、図において示される符号1は耐火煉瓦等の耐火材料にて形成された周囲部、上部、下部夫々によってほぼ密閉状に構成されている焼却炉本体であり、この焼却炉本体1は例えば据付設置面に立設される複数の支柱2等によって支持されている。この焼却炉本体1は例えば周囲部に開閉自在に形成された開閉部3から投入される生ゴミ等の一般廃棄物、各種の産業廃棄物、更にはこれらの廃棄物等の焼却後に得られた焼却灰その他を焼却炉本体1の上下部夫々に配置形成された上下部の加熱部10、20によって加熱燃焼、溶融させるようにしてある。そして下部の加熱部10によって被焼却物等を加熱溶融した後の溶融物はスラジとして焼却炉本体1底部から焼却炉本体1下方に配置してある水槽6等に排出され、また上部の加熱部20によって加熱排気された排気ガス等は焼却炉本体1上部に接続した排気筒7を経て、例えば図示を省略した浄化装置によって浄化された後に大気に放散されるようにしてある。

【0008】下部の加熱部10は、底部に至るに伴ない窄まり状に小径となる耐火・耐熱性の排出部内に炉内空間の底部中心を頂部とする鍾体面の周囲にドーナツ状に配置形成されている。そしてその内周面は炉内中心部側に、外周面は炉内周縁部側に夫々向けられていて、炉内で燃焼されることで焼却溶融された溶融物等がこの下部の加熱部20内で内周面側から外周面側へ流出され、加熱部10外周縁の焼却炉本体1の下部に連通させて例えば放射状に配列形成した流出路4を経て焼却炉本体1底部のほぼ中央部に形成してある排出口5から焼却炉本体1外部に排出されるものとしてある。

【0009】下部の加熱部10自体は、多数の電気抵抗発熱体11を放射状に配列することで平面から見た全体がドーナツ状を呈するように形成されたもので、電気抵抗発熱体11は、相互に対向配置された一対の電極12と、この電極12相互間に充填された炭素粒子を有して成る発熱体13と、内外に連通させて発熱体13内に配置された耐熱性の放熱筒14と、電極12間に電流を供給する電源回路15とを備え、放射状に隣接配列された

ときの電気抵抗発熱体11夫々の相互間は例えば絶縁性の耐火材16によって絶縁処理されていて、夫々の電気抵抗発熱体11が独立して発熱制御されるものとしてある。

【0010】発熱体13は例えば木炭の如き植物を炭化した後の炭化物を粉碎して得た炭素粒子を主たる成分とするもので、例えば備長炭を材料として形成されるも、これに限定されるものではないのである。そして例えばこの炭素粒子と、所定温度以下では電気的に絶縁体である反面所定の温度を超えると半導体または導体となる金属化合物の無機粒子と、これらの粒子を結合する炭化バインダとにより組成するものとしてもよいものである。いずれにしても電極12間に供給される電流によってその接触界面から抵抗熱が発生し、この熱が発熱体13に伝熱されつつ放熱筒14壁自体を経てこの放熱筒14内に放熱され、ひいては焼却炉本体1内の温度を上昇させるものとなっている。また発熱体13は電極12に対する電流の供給量の制御例えば電圧、電流制御に対応して発熱量が制御調整されるものとされ、例えば1800℃前後に加熱することができるものとしてある。なおこの発熱体13は、その費消に伴ない、焼却炉本体1の周囲部に形成された開閉される補充口17を経て逐次補充されるようになっている。

【0011】放熱筒14はカーボン、セラミックスその他の熱伝導性が良好な、更には発生する遠赤外線によっても内部空間を加熱するような素材によって筒状に形成されており、図示のように電気抵抗発熱体11をドーナツ状に配列したときの内外周面夫々に開口端が位置されていて、内周面側の開口端が外周面側の開口端に比しやや高位置に設定された傾斜状態となっていることで、この放熱筒14内を溶融焼却物が炉内中心部側から炉内周縁部側に案内流出されるようにしてある。またこの放熱筒14は、電気抵抗発熱体11自体が相互に隣接して全体としてドーナツ状に構成されていることで、炉内の下部で放射状に配列されることになり(図2参照)、炉内に存する被焼却物等を分散させて効率的に加熱溶融させ、流出させることができるようにしてある。

【0012】なお図示例の下部の加熱部10において、炉内の中心部側が高位置に設定されたものであるも、図示を省略したが炉内の外周縁部側が高位置に設定されたものとなってもよく、その場合の排出部更には流出路4形状、構造等はそれに対応して変更されるものである。

【0013】一方、上部の加熱部20は、上部に至るに伴ない窄まり状に小径となる耐火・耐熱性の排気部内に炉内空間の上部中心を頂部とする鍾体面の周囲にドーナツ状に配置形成されている。そしてその内周面は炉内中心部側に、外周面は炉内周縁部側に夫々向けられていて、炉内で被焼却物等が燃焼されることで生じた排気ガス等がこの上部の加熱部20内で外周面側から内周面側

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へ上昇流出され、焼却炉本体1上部に接続した排気筒を経て排気されるようにしてある。

【0014】この上部の加熱部20自体は前述した下部の加熱部10とはほぼ同様な構造を備えているもので、電極22、発熱体23、放熱筒24、電源回路25を備えた電気抵抗発熱体21を相互に隣接させて全体としてドーナツ状に配列することで構成され、また補充口27を経て発熱体23が補充されるようにしてあり、その詳細な説明は下部の加熱部10における電気抵抗発熱体11と同様なので省略される。ただ放熱筒24では、低位置に設定されている外周面側の開口端から排気ガス等が流入されて加熱燃焼され、高位置に設定されている内周面側の開口端から排気されるようになっているのである。

【0015】なお図示例の上部の加熱部20において、炉内の中心部側が高位置に設定されたものであるも、図示を省略したが炉内の外周縁部側が高位置に設定されて、内周面側から外周面側に排気ガス等が上昇するようになっていてもよく、その場合の排気筒7の排気口における形状、構造等はそれに対応して変更されるものである。

【0016】また焼却炉本体1上部側には加熱部20の下方に位置させて、排気孔19が開穿されている抑制盤18が例えば必要に応じて配装されており、焼却炉本体1の炉内における被焼却物等の加熱燃焼を効率的に行なえるようにしてある。

【0017】なお上下部の加熱部10、20は、焼却炉本体1の上下部夫々に配置されるものとされず、上下部のいずれか一方のみに配置されることもあり、焼却、溶融すべき被焼却物等に対応して適宜に選択されるものとなっている。

【0018】次にこれの使用の一例を説明すると、各種の廃棄物等更にはそれらの廃棄物等の焼却後に得られた焼却灰等を開閉部3を経て焼却炉本体1内に投入し、上下部加熱部10、20夫々に通電し、電気抵抗発熱体11、21夫々に発生する電気抵抗熱によって被焼却物等を加熱燃焼するのである。そしてその加熱燃焼によって得られた溶融物は下部の加熱部10における電気抵抗発熱体11の放熱筒14内で更に加熱溶融されながら下方に流出し、流出路4、排出口5を経て外部の例えば水槽6内に排出される。一方、加熱燃焼によって生じた煤塵、有害成分等を含んだ排気ガス等は上部の加熱部20における電気抵抗発熱体21の放熱筒24内で更に加熱燃焼されながら上方に上昇し、排気筒7を経て外部の例えば図示を省略した浄化装置に排気されるのである。

【0019】なお水槽6内に落下された溶融物等は冷却されることでスラジ化され、このスラジ物は水槽6から取り出されて土木・建築用資材その他に利用されるものとしてある。

【0020】

【発明の効果】本発明は以上のように構成されているた

め、一般廃棄物、産業廃棄物をはじめとする各種の廃棄物等及びこれらの廃棄物等の焼却後の焼却灰その他を高温で加熱溶融、燃焼できるのであり、特に電気抵抗によって発生する抵抗熱を、放熱筒14、24内部で流出、上昇する被焼却物等に極めて有効に集中的に照射でき、被焼却物等を十分に高温で加熱溶融、燃焼できるものである。したがって従来の5倍以上の処理が可能となり、小型化されたものであっても大容量のものを短時間で高速処理できるものである。更に例えば各種の廃棄物であってもダイオキシン類等の有害な排気ガスその他の有害物質を生じさせることなく処理でき、しかも焼却炉あるいは溶融炉としての高機能なものとなり、加熱溶融することで被焼却物を減容化でき、その後の各種処理をも容易に行なえるものである。

【0021】すなわちこれは本発明において、被焼却物を焼却処理する焼却炉本体1に設けた平面でほぼドーナツ状の加熱部10、20を、相互に対向配置された一对の電極12、22と、この電極12、22相互間に充填された炭素粒子を有して成る発熱体13、23と、内外に連通させて発熱体13、23内に配置された耐熱性の放熱筒14、24と、電極12、22間に電流を供給する電源回路15、25とを備えた多数の電気抵抗発熱体11、21を相互に隣接配置して全体としてドーナツ状に配列して成るものとしたからであり、これによって電気抵抗熱で発熱する電気抵抗発熱体11、21による被焼却物への高温による加熱処理の効率化、有害物質等の焼却無害化、大容量の高速処理化、炉構成自体の小型化等を図ることができる。

【0022】また発熱する発熱体13、23内に耐熱性の放熱筒14、24を配置してあるから、その電気抵抗熱は放熱筒14、24壁を経てこの放熱筒14、24内の被焼却物、排気ガス等をその周囲から極めて効率的に加熱燃焼できるのである。しかも多数の電気抵抗発熱体11が隣接配置されて全体が平面でドーナツ状を呈する加熱部10、20夫々では、多数の放熱筒14、24が放射状に配列されているものとなるから、下部の加熱部10で流出される被焼却物、上部の加熱部20で上昇排気される排気ガス等はその全てが分散されて満遍なく加熱されるのであり、燃焼、溶融等の各処理を高速で極めて効率的に行なうことができる。

【0023】更に下部の加熱部10は、炉内中心部側の内周面側が高位置に設定配装されているから、炉内中心部側に投入集積される被焼却物を炉内外周縁部側に流出分散させて夫々で少量ずつで加熱焼却することができ、また上部の加熱部20は、炉内外周縁部側の外周面側が低位置に設定配装されているから、炉内に発生する有害ガス等を外周縁部側から炉内中心部側に少量ずつで加熱焼却しながら収束収斂して纏めて排気処理することができるのである。

【図面の簡単な説明】

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【図1】本発明の実施の一形態における縦断面図である。

【図2】同じく図1におけるX-X線に沿う要部の平断面図である。

【図3】同じく図2におけるY-Y線に沿う要部の断面図である。

【符号の説明】

1…焼却炉本体  
3…開閉部  
5…排出口  
7…排気筒

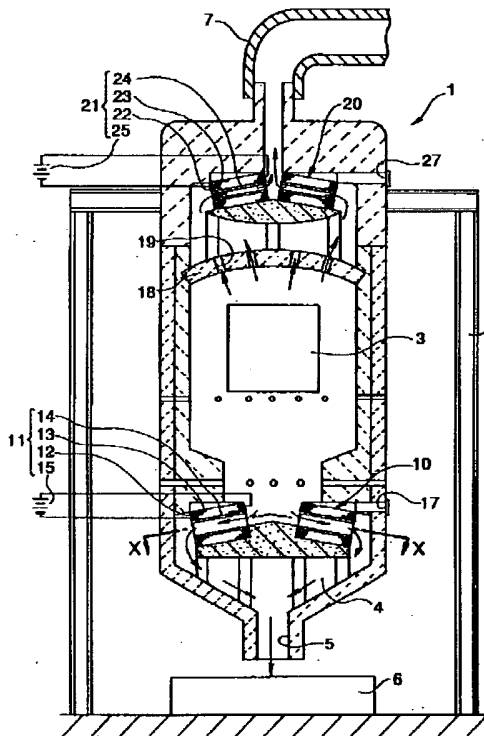
2…支柱  
4…流出路  
6…水槽

10

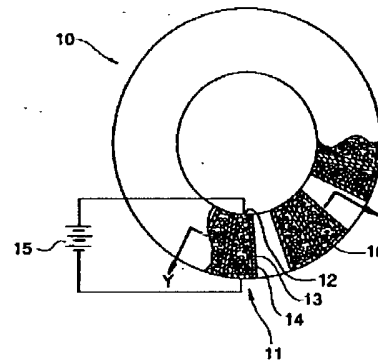
10…下部の加熱部  
発熱体  
12…電極  
14…放熱筒  
16…耐火材  
18…抑制盤  
20…上部の加熱部  
発熱体  
22…電極  
24…放熱筒  
27…補充口

11…電気抵抗  
13…発熱体  
15…電源回路  
17…補充口  
19…排気孔  
21…電気抵抗  
23…発熱体  
25…電源回路

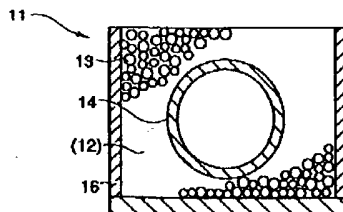
【図1】



【図2】



【図3】



## 【手続補正書】

【提出日】平成9年12月25日

## 【手続補正1】

【補正対象書類名】明細書

【補正対象項目名】0007

【補正方法】変更

【補正内容】

【0007】

【発明の実施の形態】以下、図面を参照して本発明の実施の形態を説明するに、図において示される符号1は耐火煉瓦等の耐火材料にて形成された周囲部、上部、下部夫々によってほぼ密閉状に構成されている焼却炉本体であり、この焼却炉本体1は例えば据付設置面に立設される複数の支柱2等によって支持されている。この焼却炉本体1は例えば周囲部に開閉自在に形成された開閉部3から投入される生ゴミ等の一般廃棄物、各種の産業廃棄物、更にはこれらの廃棄物等の焼却後に得られた焼却灰その他を焼却炉本体1の上下部夫々に配置形成された上下部の加熱部10、20によって加熱燃焼、溶融させるようにしてある。そして下部の加熱部10によって被焼却物等を加熱溶融した後の溶融物はスラグとして焼却炉本体1底部から焼却炉本体1下方に配置してある水槽6等に排出され、また上部の加熱部20によって加熱排気された排気ガス等は焼却炉本体1上部に接続した排気筒7を経て、例えば図示を省略した浄化装置によって浄化された後に大気に放散されるようにしてある。

## 【手続補正2】

【補正対象書類名】明細書

【補正対象項目名】0019

【補正方法】変更

【補正内容】

【0019】なお水槽6内に落下された溶融物等は冷却

されることでスラグ化され、このスラグ物は水槽6から取り出されて土木・建築用資材その他に利用されるものとしてある。

## 【手続補正3】

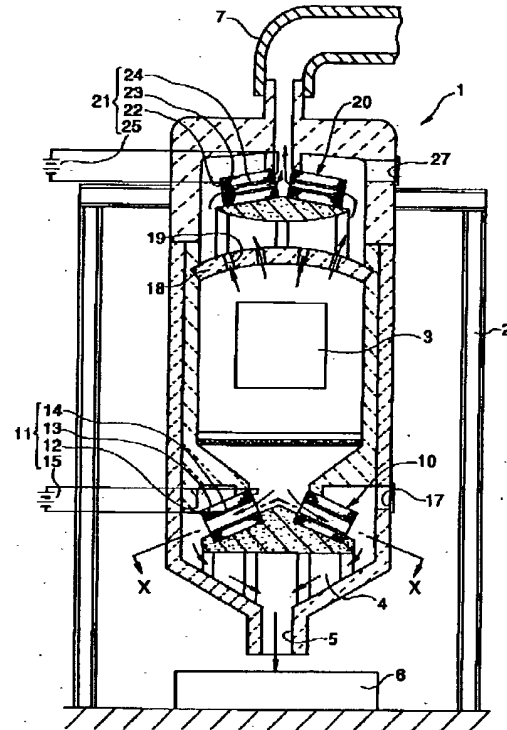
【補正対象書類名】図面

【補正対象項目名】図1

【補正方法】変更

【補正内容】

【図1】





\* NOTICES \*

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CLAIMS

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[Claim(s)]

[Claim 1] Highly efficient melting furnaces, such as burned ash by electric resistance heat which carries out contiguity arrangement of many electric resistance heating elements characterized by providing the following mutually, and is characterized by arranging in the shape of a doughnut as a whole, and changing It is the electrode of a couple with which heating combustion of various kinds of objects destroyed by fire was carried out, and a heating unit which presents the shape of a doughnut mostly was prepared in a main part of an incinerator which carries out incineration processing, it grew into it at a flat surface, and opposite arrangement of this heating unit was carried out mutually. A heating element which has a carbon particle with which it filled up between [ this ] electrodes, and changes A heat-resistant barrel jacket which it was made in and abroad open for free passage, and has been arranged in a heating element A power circuit which supplies current to inter-electrode

[Claim 2] They are highly efficient melting furnaces, such as burned ash by electric resistance heat according to claim 1 which a barrel jacket arranges a opening edge to an inside-and-outside peripheral surface of a heating unit, and compares either of the opening edges of an inside-and-outside peripheral surface with another side, and has been set as a high location.

[Claim 3] \*\*\*\* a heating unit in the vertical section of a main part of an incinerator, and, as for a lower heating unit, an inner skin side by the side of a core in a furnace is set as a high location. The melting runoff of the object destroyed by fire is made to be carried out at a opening edge by the side of a peripheral face from a opening edge by the side of inner skin of a barrel jacket. Moreover, upside heating units are highly efficient melting furnaces, such as burned ash by electric resistance heat according to claim 1 or 2 with which a peripheral face side by the side of the furnace inside-and-outside periphery section is set as a low location, and lifting exhaust air has been made to be carried out at a opening edge by the side of inner skin in exhaust gas etc. from a opening edge by the side of a peripheral face of a barrel jacket.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] It faces carrying out incineration disposal of the burned ash and others after those incineration further, and it can process certainly in the state of an elevated temperature, without producing the harmful matter of dioxin and others, and this invention mainly relates to highly efficient melting furnaces, such as domestic wastes, such as a kitchen garbage, industrial waste, and burned ash by electric resistance heat also with easy handling.

[0002]

[Description of the Prior Art] The source of pyrexia of electric resistance \*\*\*\* used as this conventional kind of incinerator and a melting furnace \*\*\*\* the heating element which is filled up with many carbon particles between [ of the couple which carried out opposite arrangement ] electrodes, and grows into it, and is made exoergic with the electric resistance produced in a heating element by supplying current between [ that ] electrodes. Moreover, this source of pyrexia will be in an elevated-temperature condition in comparison, and since that exoergic control is easy in comparison, it is used as a thing of the incinerator at the time of incinerating various kinds of trash etc., and a melting furnace. It is installed by carrying out the parallel arrangement of the heating element of a large number constituted in the shape of a barrel to for example, an incinerator pars basilaris ossis occipitalis as source structures of pyrexia, such as such an incinerator and a melting furnace.

[0003]

[Problem(s) to be Solved by the Invention] However, according to the thing of such conventional installation structure, since heating combustion of the object destroyed by fire etc. will be carried out with the resistance heat generated around a heating element, the generated resistance heat has not fully been given to the object destroyed by fire. That is, \*\* emitted around a heating element, and since the object destroyed by fire etc. did not glare directly, the resistance heat generated in a heating element was not used effectively, but the thermal efficiency was falling inevitably. It was that to which it becomes nonuniformity, without equalizing the exoergic distribution between the carbon particles of survival etc. even if it fills up newly the carbon particle spent with the pyrexia not only in it but a heating element, and an electric resistance value becomes low, calorific value decreases, quantity of electricity becomes inevitably large as a result, and electrical charges increase.

[0004] It is what was created in view of many situations which consisted conventionally [ above ]. then, this invention -- \*\* -- Without carrying out stripping to the object destroyed by fire etc. around, intensive [ of the resistance heat generated with electric resistance ] shall be carried out, and it shall be irradiated very effectively. While being able to carry out the heating fusion of the object destroyed by fire etc. and fully enabling processing of it to a large quantity by high temperature for a short time, an incinerator, It can do with a thing highly efficient as a melting furnace etc., for example, it can process, without producing the harmful matter of harmful exhaust gas and harmful others, such as dioxin, even if it is various kinds of industrial waste. And-izing of the object destroyed by fire can be carried out [ \*\*\*\* ] by carrying out heating fusion at an elevated temperature, and it aims at offering highly efficient

melting furnaces, such as burned ash by the electric resistance heat which enabled it to also perform various subsequent processings easily.

[0005]

[Means for Solving the Problem] If it is in this invention in order to attain the object mentioned above Heating combustion of various kinds of objects destroyed by fire is carried out, and at a flat surface, the heating units 10 and 20 which present the shape of a doughnut mostly are formed in the main part 1 of an incinerator which carries out incineration processing, and it grows into it. These heating units 10 and 20 The heating elements 13 and 23 which have mutually the electrodes 12 and 22 of a couple by which opposite arrangement was carried out, this electrode 12, and a carbon particle with which it filled up between 22, and grow into it, Contiguity arrangement of the electric resistance heating elements 11 and 21 of a large number equipped with the heat-resistant barrel jackets 14 and 24 which it was made in and abroad open for free passage, and have been arranged in a heating element 13 and 23, and an electrode 12 and the power circuits 15 and 25 which supply current among 22 is carried out mutually, and it arranges in the shape of a doughnut as a whole, and changes. A opening edge can be arranged to an inside-and-outside peripheral surface of heating units 10 and 20, barrel jackets 14 and 24 are compared with another side, and either of the opening edges of an inside-and-outside peripheral surface is set as a high location, and they can constitute it. \*\*\*\* heating units 10 and 20 in the vertical section of the main part 1 of an incinerator, and, as for the lower heating unit 10, an inner skin side by the side of a core in a furnace is set as a high location. The melting runoff of the object destroyed by fire is made to be carried out at a opening edge by the side of a peripheral face from a opening edge by the side of inner skin of a barrel jacket 14. Moreover, a peripheral face side by the side of the furnace inside-and-outside periphery section is set as a low location, lifting exhaust air is carried out at a opening edge by the side of inner skin, and exhaust gas etc. can make and constitute the upside heating unit 20 from a opening edge by the side of a peripheral face of a barrel jacket 24.

[0006] It is in highly efficient melting furnaces, such as burned ash by electric resistance heat concerning this invention constituted as mentioned above, and when burned ash after incineration of these trash, such as trash, etc. is thrown into the main part 1 of an incinerator and it energizes to the electric resistance heating element 11 in the heating units 10 and 20 of the vertical section, and 21 each, an electrode 12 and the heating elements 13 and 23 of a carbon particle which fills up and changes between 22 are made to generate heat by electric resistance with which itself is equipped. This electric resistance heat passes through a heating element 13, the barrel jacket 14 arranged in 23, and 24 walls. This barrel jacket 14, an object in 24 destroyed by fire, In carrying out heating combustion of the exhaust gas etc. efficiently from the perimeter, and being arranged by radial in the state of dip by heating unit 10 and 20 each An object which flows out by the lower heating unit 10 destroyed by fire, exhaust gas by which lifting exhaust air is carried out by the upside heating unit 20 are distributed, it heats uniformly, and it burns and melting of the all is carried out. The heating unit 10 of the lower part by which setting-out \*\*\*\* of the inner skin side by the side of a core in a furnace is carried out in a high location distributes an object by which charge accumulation is carried out at a core side in a furnace destroyed by fire to a furnace inside-and-outside periphery section side, and carries out heating incineration. Moreover, the heating unit 20 of the upper part where setting-out \*\*\*\* of the peripheral face side by the side of the furnace inside-and-outside periphery section is carried out in a low location carries out convergence convergence of the harmful gas which occurs in a furnace at a core side in a furnace, and carries out heating incineration.

[0007]

[Embodiment of the Invention] The sign 1 hereafter shown in drawing for explaining the gestalt of operation of this invention with reference to a drawing is a main part of an incinerator mostly constituted by the perimeter section formed with fire-resisting material, such as a refractory brick, the upper part, and each lower part in the shape of sealing, and this main part 1 of an incinerator is supported by two or more stanchion 2 grades set up for example, in an installation installation side. It heating-burns and this main part 1 of an incinerator has been made to carry out melting of domestic wastes, such as a kitchen garbage thrown in from the closing motion section 3 formed in the perimeter section free [ closing

motion ], various kinds of industrial waste, the burned ash further obtained after incineration of these trash etc., and others by the heating units 10 and 20 of the vertical section by which arrangement formation was carried out to each vertical section of the main part 1 of an incinerator. And after the exhaust gas in which the melt after carrying out heating fusion of the object destroyed by fire etc. by the lower heating unit 10 was discharged by the cistern 6 grade arranged in main part of incinerator 1 lower part from main part of incinerator 1 pars basilaris ossis occipitalis as sludge, and heating exhaust air was carried out by the upside heating unit 20 is purified by the purge which omitted the graphic display through the flue connector 7 linked to the main part of incinerator 1 upper part, stripping has been made to be carried out at atmospheric air.

[0008] Arrangement formation of the lower heating unit 10 is carried out at the shape of a doughnut around the weight dignity which uses the pars-basilaris-ossis-occipitalis center of the space in a furnace as a crowning at the fireproof and heat-resistant blowdown circles which follow on resulting in a pars basilaris ossis occipitalis, narrow, and serve as a byway at \*\*. And the inner skin is turned to the core side in a furnace, and the peripheral face is turned to the furnace inner circumference edge side, respectively. The melt by which incineration melting was carried out by burning in a furnace flows out of an inner skin side into a peripheral face side within the heating unit 20 of this lower part. It shall be discharged from the exhaust port 5 of main part of incinerator 1 pars basilaris ossis occipitalis currently mostly formed in the center section to the main part of incinerator 1 exterior through the runoff way 4 which the lower part of the main part 1 of an incinerator of a heating unit 10 periphery edge was made open for free passage, for example, carried out array formation at the radial.

[0009] Heating unit 10 lower the very thing is what was formed so that the whole which looked at many electric resistance heating elements 11 from the flat surface in arranging to a radial might present the shape of a doughnut. The electric resistance heating element 11 The electrode 12 of the couple by which opposite arrangement was carried out mutually, and the heating element 13 which has the carbon particle with which it filled up between [ this ] electrode 12, and changes, The heat-resistant barrel jacket 14 which it was made in and abroad open for free passage, and has been arranged in a heating element 13, It shall have the power circuit 15 which supplies current between electrodes 12, insulating processing of between electric resistance heating element 11 each when a contiguity array is carried out at a radial shall be carried out with the insulating refractory material 16, and exoergic control shall have been independently carried out in each electric resistance heating element 11.

[0010] A heating element 13 uses as a main component the carbon particle which ground and obtained carbide after carbonizing the vegetation like charcoal, and is not limited to \*\* and this which are formed considering a Bincho charcoal as a material. And it is good also as what is composed, for example with this carbon particle, the inorganic particle of the metallic compounds which will serve as a semiconductor or a conductor if a predetermined temperature is exceeded while it is an insulating material electrically below in predetermined temperature, and the carbonization binder that combines these particles. Anyway, heat is radiated in this barrel jacket 14 through the barrel jacket 14 wall itself, resistance heat occurring from that contact interface, and heat retaining of this heat being carried out to a heating element 13 by the current supplied between electrodes 12, as a result the temperature within the main part 1 of an incinerator is raised. Moreover, corresponding to current control, control, for example, the voltage, of the amount of supply of the current over an electrode 12, control adjustment shall be carried out in calorific value, for example, the heating element 13 shall be heated before and after 1800 degrees C. In addition, this heating element 13 is serially filled up with that consumption through the supplement opening 17 which is opened and closed and which was formed in the perimeter section of the main part 1 of an incinerator.

[0011] The barrel jacket 14 is formed in tubed with a raw material with the good thermal conductivity of carbon, the ceramics, and others for which a building envelope is heated also with the far infrared rays generated further. Because it is in the dip condition which the opening edge is located in each inside-and-outside peripheral surface when arranging the electric resistance heating element 11 in the shape of a doughnut like a graphic display, and the opening edge by the side of inner skin compared with the opening edge by the side of a peripheral face, and was set a little as the high location The advice runoff

of the melting incineration object has been made to carry out the inside of this barrel jacket 14 at the furnace inner circumference edge side from the core side in a furnace. Moreover, this barrel jacket 14 will be arranged by the radial in the lower part in a furnace (refer to drawing 2 ), and electric resistance heating element 11 the very thing distributes the object which consists in a furnace destroyed by fire, carries out heating melting of it efficiently, and enables it to make it have flowed out with adjoining mutually and being constituted in the shape of a doughnut as a whole.

[0012] in addition, the thing by which the core side in a furnace was set as the high location in the heating unit 10 of the lower part of the example of a graphic display -- it is -- it is also -- although the graphic display was omitted, the periphery edge side in a furnace may be what was set as the high location, and the blowdown section in that case and also runoff way 4 configuration, structure, etc. are changed corresponding to it.

[0013] On the other hand, arrangement formation of the upside heating unit 20 is carried out at the shape of a doughnut around the weight dignity which uses the up center of the space in a furnace as a crowning at the fireproof and heat-resistant exhaust air circles which follow on reaching the upper part, narrow and serve as a byway at \*\*. And that inner skin is turned to the core side in a furnace, and the peripheral face is turned to the furnace inner circumference edge side, respectively, and through the flue connector linked to the main part of incinerator 1 upper part, it is exhausted and has been made to carry out upflow appearance of the exhaust gas produced because the object destroyed by fire etc. burns in a furnace from a peripheral face side within the heating unit 20 of this upper part to an inner skin side, and to be carried out.

[0014] Besides, heating unit 20 the very thing of the section is a thing equipped with the almost same structure as the heating unit 10 of the lower part mentioned above. It consists of making the electric resistance heating element 21 equipped with the electrode 22, the heating element 23, the barrel jacket 24, and the power circuit 25 adjoin mutually, and arranging in the shape of a doughnut as a whole. Moreover, it is made to be supplied in the heating element 23 through the supplement opening 27, and since it is the same as that of the electric resistance heating element 11 in the lower heating unit 10, the detailed explanation is omitted. By the barrel jacket 24, exhaust gas etc. flows from the opening edge by the side of the peripheral face set as the low location, and heating combustion is carried out and it is merely exhausted from the opening edge by the side of the inner skin set as the high location.

[0015] in addition, the thing by which the core side in a furnace was set as the high location in the heating unit 20 of the upper part of the example of a graphic display -- it is -- it is also -- although the graphic display was omitted, the periphery edge side in a furnace is set as a high location, from an inner skin side, exhaust gas etc. goes up and the configuration in the exhaust port of the flue connector 7 in that case, structure, etc. are changed into a peripheral face side corresponding to it.

[0016] Moreover, you make it located in a main part of incinerator 1 upper-part side under the heating unit 20, the control board 18 which trepans the exhaust hole 19 is \*\*\*\*(ed) if needed, and it enables it to have performed efficiently heating combustion of the object in the furnace of the main part 1 of an incinerator destroyed by fire etc.

[0017] In addition, since it is arranged only at either of the vertical sections, without being arranged at each vertical section of the main part 1 of an incinerator, the heating units 10 and 20 of the vertical section have been suitably chosen corresponding to incineration, the object which should be carried out melting destroyed by fire.

[0018] Next, if an example of an activity of this is explained, burned ash further obtained after incineration of those trash etc., such as various kinds of trash, will be thrown in in the main part 1 of an incinerator through the closing motion section 3, it will energize to the vertical section heating unit 10 and 20 each, and heating combustion of the object destroyed by fire etc. will be carried out with the electric resistance heat generated in the electric resistance heating element 11 and 21 each. And the melt obtained by the heating combustion flows out caudad, while heating melting is further carried out within the barrel jacket 14 of the electric resistance heating element 11 in the lower heating unit 10, and it is discharged for example, in the external cistern 6 through the runoff way 4 and an exhaust port 5. The exhaust gas which, on the other hand, contained the soot dust produced by heating combustion, an

injurious ingredient, etc. goes up up, while heating combustion is further carried out within the barrel jacket 24 of the electric resistance heating element 21 in the upside heating unit 20, and it is exhausted by the purge which omitted the external graphic display through the flue connector 7.

[0019] In addition, melt which fell in the cistern 6 shall be sludge-ized by being cooled, this sludge object shall be picked out from a cistern 6, and it shall be used at engineering works and structural materials, and others.

[0020]

[Effect of the Invention] Since this invention is constituted as mentioned above, it can irradiate very effectively the burned ash and others after incineration of these trash, such as various kinds of trash including domestic wastes and industrial waste, etc. intensively at an elevated temperature at the object which flows out and goes up heating melting and the resistance heat which it can burn and is generated especially with electric resistance in a barrel jacket 14 and the 24 interior destroyed by fire, and are fully heating melting and the thing which can burn in high temperature about the object destroyed by fire etc. Therefore, processing of 5 or more times over the past is attained, and even if miniaturized, the high-speed processing of the mass thing can be carried out for a short time. It can process without producing the harmful matter of harmful exhaust gas and harmful others, such as dioxin, further, for example, even if it is various kinds of trash, and moreover it becomes a highly efficient thing as an incinerator or a melting furnace, -izing of the object destroyed by fire can be carried out [ \*\*\*\* ] by carrying out heating fusion, and various subsequent processings can also be performed easily.

[0021] Namely, the electrodes 12 and 22 of the couple by which opposite arrangement was mostly carried out mutually in the doughnut-like heating units 10 and 20 at the flat surface at which this prepared the object destroyed by fire in the main part 1 of an incinerator which carries out incineration processing in this invention, This electrode 12 and the heating elements 13 and 23 which have the carbon particle with which it filled up between 22, and change, The heat-resistant barrel jackets 14 and 24 which it was made in and abroad open for free passage, and have been arranged in a heating element 13 and 23, It is because contiguity arrangement of an electrode 12 and the electric resistance heating elements 11 and 21 of a large number equipped with the power circuits 15 and 25 which supply current among 22 is carried out mutually, and it shall arrange in the shape of a doughnut as a whole and shall change. Incineration defanging of the increase in efficiency of heat-treatment by the high temperature to the object by the electric resistance heating elements 11 and 21 which generate heat with electric resistance heat destroyed by fire, harmful matter, etc., mass processing[ high-speed ]-izing, the miniaturization of the furnace configuration itself, etc. can be attained by this.

[0022] Moreover, since the heat-resistant barrel jackets 14 and 24 are arranged in the heating element 13 generating heat and 23, that electric resistance heat can carry out heating combustion of this barrel jacket 14, the object in 24 destroyed by fire, the exhaust gas, etc. very efficiently from that perimeter through a barrel jacket 14 and 24 walls. and in the heating unit 10 and 20 each to which contiguity arrangement of many electric resistance heating elements 11 is carried out and which the whole presents the shape of a doughnut at a flat surface Since many barrel jackets 14 and 24 become what is arranged by the radial The all are distributed, and the object which flows out by the lower heating unit 10 destroyed by fire, the exhaust gas by which lifting exhaust air is carried out by the upside heating unit 20 are heated uniformly, and can perform each processing of combustion, melting, etc. very efficiently at high speed.

[0023] Furthermore, since setting-out \*\*\*\* of the inner skin side by the side of the core in a furnace is carried out in the high location, the lower heating unit 10 Runoff distribution can be carried out, it can come out of the object by which charge accumulation is carried out at the core side in a furnace destroyed by fire to a furnace inside-and-outside periphery section side, respectively, and heating incineration can be carried out by every [ small quantity ]. the upside heating unit 20 Since setting-out \*\*\*\* of the peripheral face side by the side of the furnace inside-and-outside periphery section is carried out in the low location, carrying out heating incineration of the harmful gas which occurs in a furnace by every [ small quantity ] from a periphery edge side at the core side in a furnace, convergence convergence can be carried out, it can collect and exhaust air processing can be carried out.

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[Translation done.]